

Claims:

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1. A method of making an embossed abrasive article comprising:
    - a. providing a sheet-like foam backing having a first surface and an opposite second surface;
    - b. providing an abrasive coating comprising abrasive particles and binder over said first surface to provide an abrasive article; and
    - c. applying under pressure a patterned embossing tool having an embossing surface including at least a pattern of raised areas to the abrasive coating of the abrasive article to provide an embossed pattern at least including depressed areas corresponding to the raised areas of said embossing surface in said abrasive coating and said foam backing to provide an embossed abrasive article.
  15. The method of claim 1 wherein said embossing surface also includes depressed areas and said embossed pattern also includes raised areas corresponding to said depressed areas of said embossing surface.
  20. The method of claim 1 wherein said pattern comprises a uniform pattern.
  25. The method of claim 1 wherein said pattern comprises a random pattern.
  5. The method of claim 1 wherein said abrasive coating is provided by applying a flowable curable binder make coating to said first surface, at least partially embedding therein said abrasive particles and at least partially curing said make coating.
  6. The method of claim 5 further comprising applying said over said make coating and said abrasive particles, a flowable binder size coating and curing said size coating.

7. The method of claim 6 wherein at least one of said binder make coating and said binder size coating comprises a radiation-curable binder and said curing is by radiation curing.

5 8. The method of claim 1 wherein said abrasive coating is provided by applying a mixture of flowable curable binder and abrasive particles to said first surface and curing said flowable curable binder to provide said abrasive coating.

10 9. The method of claim 8 wherein said flowable curable binder comprises a radiation-curable binder and said curing is by radiation curing.

15 10. The method of claim 8 wherein, after said coating mixture of flowable curable binder and abrasive particles are applied to said first surface and before curing, said coating is contacted with a device having a surface which imparts a pattern to the abrasive coating to provide raised areas and depressed areas in the abrasive coating but not in the foam backing and at least partially curing the patterned abrasive coating.

11. The method of claim 1 wherein said patterned embossing tool is an embossing roll.

20 12. The method of claim 1 wherein said depressed areas extend to a depth of at least 200  $\mu\text{m}$  into the foam backing.

13. The method of claim 1 wherein said foam backing has a thickness of at least about 0.2 millimeter.

25 14. The method of claim 1 wherein said foam backing has a thickness in the range of about 1 millimeter to about 6 millimeter.

15. The method of claim 1 wherein said foam backing is an open cell foam.

30 16. The method of claim 1 wherein said foam backing is a closed cell foam.

17. The method of claim 1 wherein said abrasive particles have an average particle size in the range of 0.1 to 60 micrometers.

5 18. The method of claim 17 wherein said average particle size is in the range of 1 to 30 micrometers.

19. The method of claim 1 wherein the distance between the depressed areas and the abrasive coating is at least 200 micrometers.

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20. The method of claim 19 wherein said distance is at least 500 micrometers.

21. The method of claim 1 wherein said foam backing comprises a polyethylene foam backing.

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22. The method of claim 1 wherein said foam backing comprises a polyurethane foam backing.

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23. The method of claim 1 wherein said embossing tool is heated.

24. The method of claim 23 wherein said embossing tools is heated to at least 30 °C.

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25. The method of claim 23 wherein said embossing tool is heated at a temperature in the range of 80 °C to 210 °C.

26. The method of claim 1 wherein said embossing tool is applied at a pressure in the range of 1.5 to 200 N/cm of web width.